Smart Grid Deployment Plan

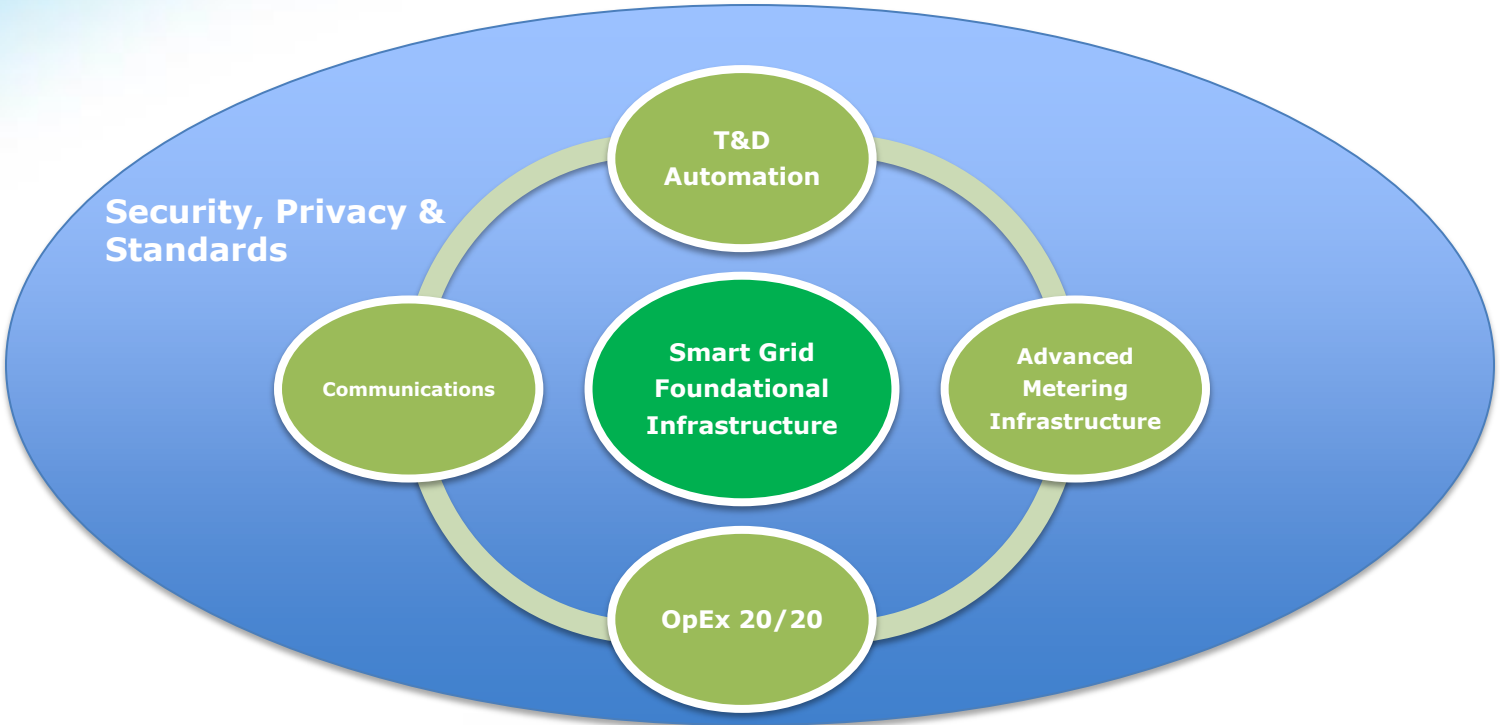
Smart Utility – Foundational Infrastructure

SDGE connected

A Sempra Energy utility℠

FOUNDATIONAL INFRASTRUCTURE

- SDG&E defines "Foundational Infrastructure" as base infrastructure and systems that will enable the applications and services required to achieve DOE's Smart Grid Vision and SB17's Smart Grid Characteristics.
  - *Near ubiquitous and multiple dependencies*
- SDG&E's foundational infrastructure is focused in four areas:



FOUNDATIONAL INFRASTRUCTURE

T&D AUTOMATION

- SDG&E has been deploying transmission, substation and distribution line SCADA since the mid 1980s.
- Over 70% of distribution circuits are controlled via SCADA.
- SDG&E has an extensive weather network providing operators wide-area situational awareness.
- *SDG&E already has seven self-healing circuits in operation, both centralized and de-centralized.

ADVANCED METERING INFRASTRUCTURE

- SDG&E completed over 98% of its Smart Meter program consisting of replacing 1.4 million electric meters and retrofit 900,000 gas modules throughout its San Diego and Orange County service territory.
- AMI has established a two-way communication infrastructure, providing automated meter reading, integrating customer information and billing systems, and enabling demand response and load control devices and services.

FOUNDATIONAL INFRASTRUCTURE

OpEx 20/20

- OpEx 20/20 is the program name for a portfolio of enterprise-wide initiatives that focus on technology upgrades and process improvements to enhance the capabilities of front-line employees within Electric & Gas Operations, back-office field and mapping support, customer service field, and the customer contact centers.
- OpEx 20/20 includes three foundational Smart Grid projects: Outage and Distribution Management Systems (OMS/DMS), Geographic Information System (GIS) and Condition Based Maintenance (CBM).

COMMUNICATION SYSTEMS

- SDG&E communication infrastructure consists of a private microwave system, a fiber optic network, a 900 MHz licensed radio system used for SCADA, as well as power line carrier, cellular, voice radio and copper lines.
- SDG&E is developing an advanced wireless communications system that will allow to monitor, communicate with and control transmission and distribution equipment, thus accelerating deployment of SG applications and devices. This network is partially funded with an ARRA Smart Grid Investment Grant.